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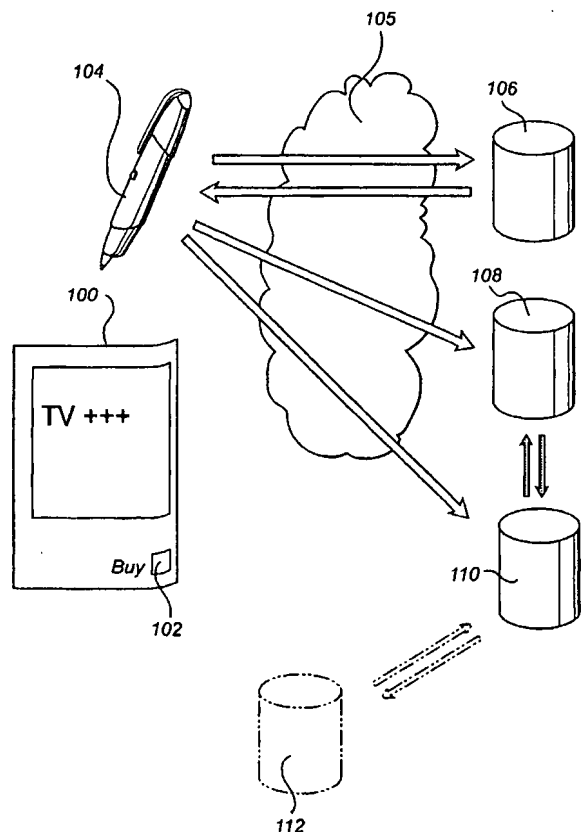
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[Continued on next page]

(54) Title: NETWORK-BASED SYSTEM



(57) Abstract: In a method for a person to carry out an operation in a network-based system, for example a payment, concerning goods or services indicated on a product, the person gives an instruction to the system to the effect that the operation is to be carried out using person-specific information previously stored in the system, by reading off a position-coding pattern in an operation field on the product using a hand-held device. The operation field is provided with a position-coding pattern that codes coordinates that represent said instruction in the system. The position-coding pattern makes it possible for the person to record electronically graphical information, for example a message or a specification of the operation, which is sent to a party in the system.



WO 02/39378 A1

NETWORK-BASED SYSTEMField of the Invention

This invention relates to different aspects of a network-based system for carrying out operations concerning goods or services that are indicated on a product and more specifically to a method, a computer program, 5 a device, a system and a product that can be used in this connection.

Background Art

There is a trend towards increased mobility in today's society. People want, for example, to be able to communicate, retrieve information, order goods and 10 services, and carry out various tasks regardless of where they are and independent of access to stationary devices. In order to meet this requirement, a number of portable and hand-held devices have been developed, such as portable computers, mobile telephones, PDAs and reading pens.

15 A further category of hand-held devices is electronic pens, using which it is possible to write and draw in the same way as with an ordinary pen, but which at the same time electronically record what is written by means of a sensor, for example a CCD or an accelerometer.

20 The Applicant has developed an electronic pen that is intended to be used on a surface which is provided with a position-coding pattern and which has an optical sensor which continually reads off the position-coding pattern in order to record what is written electronically 25 in the form of coordinates. The position-coding pattern and the pen is described in e.g. WO 01/26032, which is hereby incorporated by reference. A pen of a similar type is described in US 5,852,434.

30 The Applicant's pen can, among other things, be used to write messages and to send these via a mobile phone to another mobile phone or via the mobile phone and the Internet to a computer.

cation with other units in the network-based system can take place immediately or at a later time.

The operation concerns goods or services in a wide sense. The goods or services can already have been delivered or can be about to be delivered in the future as a result of the operation. The operation can preferably consist of a payment for the goods or services, in which case the person-specific information can be an account from which the payment is to be made. It can, however, also consist of an order for goods, for example information, in which case the person-specific information is the person's address, electronic or physical, to which the information is to be sent. It can also consist of an electronic signing of a document, in which case the person-specific information is the person's signature in digital format. A further example is subscribing to shares, which requires access to more than one type of person-specific information, for example civic registration number and address. A person skilled in the art can find further examples of operations that require access to person-specific information that is of the nature that it is not changed often but can be previously stored in the network-based system in order to be used by various parties in the system for the carrying out of operations concerning various goods and services when the person so permits.

The goods or services are indicated on the product. By this it is meant that there is information on the product so that the user can understand which goods or services are intended and what effect reading off the position-coding pattern in the operation field will have. The product can be any product on which one or more items of goods or services can be indicated and on which a position-coding pattern can be applied in such a way that it can be read off by a hand-held device which is intended for this purpose. The product is preferably a physical product and can, for example, be a sheet of paper, a bro-

At the same time as the reading off, a mark can be made with a pen point on the device. This has the advantage that the person who carried out the reading off has a "receipt" or confirmation that the reading off has been carried out.

The hand-held device can be any device that is suitable for reading off a position-coding pattern. The position-coding pattern can be optically readable, or can be readable by some other physical principle, such as electromagnetic, capacitive, inductive, chemical, etc.

In a preferred embodiment, the step of giving an instruction comprises reading off the position-coding pattern by means of a hand-held device that has a unique identity with which the person-specific information is associated.

The person who uses the device and who gives instructions to the system about the carrying out of the operation does not need to enter any identification data in order for the operation to be able to be carried out using the person-specific information, as the person is identified by means of the identity of the hand-held device. This can be a serial number, that is a unique product identification or manufacturing number, or some other unique code that has been stored in the device for identification purposes. The identity is preferably stored in hardware or in some other way that makes it difficult for a user to change it.

The step of giving an instruction preferably comprises giving an instruction to make the person-specific information available to a party that needs to use it in connection with the carrying out of the operation.

By reading off the position-coding pattern in the operation field, the person thus gives permission for the person-specific information to be made available to and to be able to be used by a party that is involved in the operation. If the operation, for example, is a payment, the instruction can comprise an instruction to allow a

on the product, or can qualify the operation, for example by specifying which method of payment is to be used.

The information field can be a separate field or can be combined with the operation field. The positions that
5 are coded in the information field and operation field need not have a relationship that corresponds to the physical relationship on the product but instead the relationship can be a different one.

A particularly interesting operation to be able to
10 carry out in a mobile way using a hand-held device is, as mentioned, a payment operation. In a preferred embodiment the system is therefore a payment system, the operation is a payment, the person-specific information is the person's account and the instruction is an instruction to
15 the effect that a payment is to be made from the account.

As the person-specific information is previously stored in the system, a person can carry out a payment just by reading off a position-coding pattern, without needing to specify a long account number which the person
20 has not normally memorized.

The method described above is of particular interest to the person when he or she can store one or more items of person-specific information in the same place in the system, from which the item or items of information can
25 be made available to various parties connecting to the system. The person does not then need to store the information with each new party with which the person wants to carry out operations in the way described above by reading off a position-coding pattern in an operation field.

30 According to a second aspect of the invention, this relates to a method in a hand-held device for initiating an operation concerning goods or services indicated on a product. The method is characterized by the steps of receiving a position-coding pattern from the product,
35 identifying, by means of coordinates which the position-coding pattern codes, an instruction from a person who uses the device to the effect that an operation is to be

operation. The coordinates make this possible. The device itself can contain means to make it possible to identify the party, but this would require considerable memory space in the device and would necessitate reprogramming
5 whenever new parties are connected to the system.

In a preferred embodiment, the step of identifying the party therefore comprises sending at least some of the coordinates to a first computer and receiving in response information about a network address of the party's
10 computer. In this way, the hand-held device obtains information about with which party it is to communicate and how the party is to be reached via the network.

The network can be any computer network, preferably the Internet.

15 The party can, for example, be a payment recipient or a provider of information or an intermediary of some kind.

As mentioned above, the person-specific information can be made available to the party for the operation.

20 In one embodiment, this can be carried out by the device creating an operation code and sending it to the party's computer and to an additional computer in the network that stores the person-specific information, so that the party can obtain access to the person-specific
25 information from the additional computer by means of the operation code.

This makes it possible for the person-specific information to be stored at a single location in the system, namely in the additional computer which is accessible to all the possible parties that can connect to the
30 network. The user can store it there himself. The storage can be carried out easily by the user himself. The additional computer can also be protected by other security systems than are possible for the hand-held device.

35 For security reasons, the operation code can be a random number or a time stamp. It can alternatively be generated in accordance with predetermined rules or be

ing from the person a choice of the person-specific information from a plurality of items of person-specific information.

5 According to a third aspect of the invention, the method described above can be realized using a computer program which is stored on a memory medium. The program can, for example, be stored in a memory in the hand-held device and executed by a computer in the hand-held device.

10 According to a fourth aspect of the invention, this relates to a hand-held device for initiating an operation concerning goods or services indicated on a product, comprising a sensor for recording a position-coding pattern and a signal-processing unit for implementing the method
15 described above.

According to a fifth aspect of the invention, this relates to a system for making possible at least one operation in a network concerning goods or services indicated on a product, which operation is intended to be
20 initiated using one hand-held device of a plurality of hand-held devices by reading off a position-coding pattern, which codes coordinates, in an operation field on the product, characterized by a device database which stores a unique identity for each of the devices and at
25 least one item of person-specific information, associated with each identity, for the person who is the owner of the device, so that the operation can be carried out by a party in the network using the person-specific information stored in the device database, the person-specific
30 information being retrievable by the party by means of the device identity, which is sent to the party in response to the device reading off the position-coding pattern in the operation field on the product.

According to a sixth aspect of the invention, this
35 relates to a product which comprises an indication concerning goods or services, and which is characterized by an operation field on the product which is provided with

normal way terms and conditions and the cost of the subscription. The advertisement further comprises an operation field 102 in the form of a payment box which is provided with a position-coding pattern. Finally the advertisement also comprises an explanation of what a tick in the payment box means.

The position-coding pattern in the operation field codes coordinates for positions on a virtual surface, which is an imaginary surface made up by all the unique points for which the position-coding pattern is able to code the coordinates. The surface is divided into a very large number of coordinate areas. The payment box is provided with a subset of the position-coding pattern that corresponds to positions within a particular coordinate area, which the advertiser has acquired the right to use.

The position-coding pattern can be the position-coding pattern that is described in the above-mentioned WO 01/26032 or any other kind position-coding pattern that codes absolute positions.

The system further comprises a hand-held device 104 in the form of an electronic pen. A unique identity number is stored in the pen which identifies the pen. The pen can communicate with computers in a network 105, for example the Internet, via integrated communication circuits or via a network connection unit (not shown), for example in the form of a mobile phone, a PDA or a computer. The network is depicted by a "cloud" in the figure.

In this embodiment, the pen 104 communicates with three computers 106, 108 and 110. The first computer 106 stores, in an address database, information about various coordinate areas on the virtual surface, for example who has the right to a particular coordinate area (below also called the owner) and which operation this coordinate area represents.

The second computer 108 stores, in a device database, the unique identity number of the electronic pens

recorded in the second computer 108 as associated with the identity number of the pen 104. The service is to be provided to the address that the pen owner has also recorded previously in the second computer 108 as associated with the identity number of the pen.

When the pen 104 receives the position-coding pattern, it decodes the pattern and determines which coordinates the pattern codes. These coordinates are sent by the pen to the first computer 106, together with the identity number of the pen.

In the first computer 106, it is checked who is the owner of the coordinate area to which the received coordinates belong. In this case it is TeVe AB. The first computer 106 sends TeVe AB's address and the stored information to the effect that the operation in question is a payment to the pen, utilizing the pen's identity number to determine the pen's address.

If the communication with the pen 104 is carried out via the pen owner's mobile phone, information about the owner of the coordinate area can be displayed on the mobile phone's display and confirmation from the pen owner can be required in order for the payment operation to be completed.

The confirmation can be carried out simply by pressing a button. In order to increase security and prevent fraudsters from using stolen pens, the confirmation can be required, for example, in the form of a PIN code or biometric data.

When the pen receives a response from the first computer 106, it creates an operation code by generating a random number. This operation code is sent together with the pen's identity number and any information to the effect that it is TeVe AB that is a party to the operation to the second computer 108 where the operation code is stored in association with the pen's identity number which is already recorded from a previous occasion. The

If the pen owner has several items of person-specific information of the same type stored in the second computer 108, for example several accounts, the second computer can send a query to the pen 104 regarding which
5 item of information is to be used for the operation. The alternatives can, for example, be displayed to the pen owner on the display of his mobile phone and the selection can be made using the keypad of the phone and sent back to the second computer 108 and in addition if necessary forwarded to the third computer 110.
10

In an alternative embodiment, the person-specific information could be stored in the pen and sent by this straight to TeVe AB's computer 110. The second computer 108 is thus not needed, at least not for storage of the
15 person-specific information.

The first and the second computers could also be one and the same computer. The term "computer" is to be taken here in the broad sense. It can be a network server.

Confirmation can also be requested at different
20 stages and by different parties in the system.

Of course, various forms of encryption can also be used for the communication between the different units in the system.

Fig. 2 shows a product 200 in the form of a page
25 with an advertisement which offers the customer a wider choice of options. In the following, the advertisement is assumed to use the same system as that described in Fig. 1. The advertisement offers two types of goods 202 and 204, in the form of two different items of clothing.
30 In the same way as in the advertisement in Fig. 1, there is a payment box 206 in the advertisement. There are in addition three boxes A, B, C in the advertisement which define the payment operation. For example, A, B, C can correspond to three different types of credit card. In
35 the different boxes A, B, C there are three different subsets of the position-coding pattern. In addition, in the first computer 106 information is stored to the

an area on the virtual surface that belongs to the advertiser and concerns a payment. It further determines that the coordinates from box B concern a credit card company B. It sends back the address of the advertiser, information to the effect that the intended operation is a payment and that the payment is to be made by means of credit card B.

In the same way as in the example in Fig. 1, the pen creates an operation code and sends this to the second computer, together with the pen's identity number and an indication that credit card account B is to be used.

In addition, the operation code, the pen's identification number and information to the effect that it is credit card account B that is to be used, are sent to the advertiser. When the advertiser receives this message, the advertiser knows that a purchase is to be made, but not of what, as the advertisement contains several types of goods and as the advertiser has perhaps several types of advertisements with payment boxes.

In the advertiser's computer 110, there is stored, however, which coordinate area the advertiser has acquired. The advertiser's computer then sends a request to the pen, the address of which can be obtained, for example, from the second computer 108 or can be apparent from the message from the pen, to the effect that the pen 104 is to send all the coordinates that it has stored within the advertiser's coordinate area.

The advertiser's computer 110 then receives the coordinates that correspond to the mark in the box 208 for the uppermost item of clothing and in this way can determine what the pen owner wants to buy and pay for.

As an alternative, it is possible for the first computer 106 to inform the pen to which coordinate area the advertiser has the right and it is possible for the pen to include all the coordinates from that area in the message to the advertiser's computer straight away, so

select a subset within the area of the position-coding pattern to which he has acquired the right so that this subset also makes it possible for the advertiser to identify to which advertisement out of a plurality of advertisements the message from the pen refers. In order for this to be possible, the pen must, however, in this case send the coordinates which correspond to the mark in the payment box.

Of course, the above can be generalized to apply to any operation. In addition the above "divided" boxes can contain more than two different subsets of the position-coding pattern. For example, the pattern from the three credit card boxes A-C could be incorporated into three separate payment boxes. The payment box 206 could thus be replaced by three payment boxes for payment by means of credit card A, B or C.

It has been stated above that the first computer has stored information about what the coordinate areas corresponding to the subsets of the position-coding pattern in the credit card boxes A, B, C, refer to. According to another variant, the advertiser could use three partial areas within his coordinate area on the virtual surface in order to create three different payment buttons, one for each of the credit cards, A, B, C. In this case, it is the advertiser's computer that identifies which credit card is to be used, on the basis of coordinate information from the payment box.

As a further variant, the advertisement could contain a payment box that is coded in such a way that the second computer returns information about possible methods of payment to the pen, whereupon the pen owner has the ability to select the method of payment, for example via his mobile phone.

Figs 3a, b and c show examples of how different coordinate areas on the virtual surface can be used.

Fig. 3a shows an example that corresponds to the embodiment in Fig. 1. TeVe AB has acquired the right

Fig. 3c shows the layout of the virtual surface when the above-mentioned example with "divided" boxes is used. In this case, the advertiser has acquired the right to the area 330. When he wants to create a payment box, he
5 uses a subset of the position-coding pattern that corresponds to the sub-area 332 within the area 330 and combines this with a subset of the position-coding pattern that corresponds to an area 340 that defines in general the operation of making a payment and which therefore
10 lies within a section 350 of the region 320 that belongs to the system administrator and for which the first computer returns to the pen an indication of which operation is referred to.

It should be emphasized that as the preferred position-coding pattern described below is used, the payment
15 box will appear essentially identical to the user in all the cases described above.

If a divided box is used, the user must make a mark that extends through most of the box so that both the
20 subsets of the position-coding pattern are read off.

In the following, a further example is described of a system for carrying out an operation regarding goods or services using person-specific information previously stored in the system. The system is described with reference to Fig. 4.
25

This system can be used to make it possible for a pen owner to pay his bills in a very simple way via, for example, a bank or postal giro account.

Assume now that company X, which is represented by
30 its computer 400, is to invoice a customer who has an electronic pen 402. The company X creates an invoice 404 in the normal way. The invoice has a specification part which specifies services or goods that have been provided or that are going to be provided. It consists therefore
35 of a product with an indication of goods or services.

The company X provides the invoice 404 with a payment box 406 with a subset of the position-coding pattern

rated and sent to both the giro bank's computer and the second computer.

Using the information obtained in this way, the giro bank can now carry out the transfer from the pen owner's
5 account to the account which is indicated on the invoice as the recipient of the invoice sum and which is stored in the giro bank's computer.

Of course, variants are also possible where the user adds graphical information in a corresponding way to that
10 described in the examples above. For example, the user could fill in an amount himself in an information field. This variant can, for example, be used when there are different alternatives on the invoice, such as payment for one or more products.

15 With reference to Fig. 5, a hand-held device that can be used in the system according to the invention will now be described.

The device comprises a casing 11 which is approximately the same shape as a pen. In a short side of the
20 casing there is an opening 12. The short end is intended to be held in contact with or a short distance from the surface from which the position-coding pattern is to be read off.

The casing contains essentially an optics part,
25 an electronic circuitry part and a power supply.

The optics part comprises at least one light-emitting diode 13 for illuminating the surface which is to be imaged and a light-sensitive area sensor 14, for example a CCD or CMOS sensor, for recording a two-
30 dimensional image. The device may also contain an optical system, such as a reflector and/or lens system. The light-emitting diode can be an infrared light-emitting diode and the sensor can be sensitive to infrared light.

The power supply for the device is obtained from a
35 battery 15 which is mounted in a separate compartment in the casing.

vice can communicate with a mobile phone for transmission of information to and from the Internet. The device can also comprise a display 20 for displaying information.

Applicant's Swedish Patent No. 9604008-4 describes
5 a device for recording text. This device can be used for carrying out operations according to the invention if it is programmed in a suitable way. If it is to be used for pigment-based writing, it must also have a pen point.

The device can be divided between different physical
10 casings, in which a first casing contains components that are necessary for recording images of the position-coding pattern and for transmitting these to components that are located in a second casing and that carry out the position determination on the basis of the recorded image or
15 images.

The method of initiating, in a hand-held device, an operation concerning goods or services indicated on a product is summarised in the flow chart of Fig. 6.

First, in step 601, the device receives a position-
20 coding pattern. The device decodes the position-coding pattern and determines the coordinate(s) corresponding thereto, step 602. In the next step 603, the party which is the owner of the coordinate area, to which the decode coordinate(s) belongs, is identified. At the same time
25 the instruction given by the user of the device is identified. This instruction indicates the operation to be initiated. In response to the identification of the party and the instruction, the device sends, step 604, an operation code and a device identity to the party and possibly also to a predetermined computer, which stores a
30 device database with the identities of all devices in the system and, associated with each identity, a person-specific piece of information. which is to be used by the party when carrying out the operation.

instruction to the effect that a payment is to be made from the account.

5 6. A method in a hand-held device for initiating an operation concerning goods or services indicated on a product, characterized by the steps of
receiving a position-coding pattern from the product,
of identifying, by means of coordinates coded by the
position-coding pattern, an instruction from a person
10 who uses the device to the effect that the operation is to be carried out using person-specific information previously stored in the system, and of making possible the carrying out of the operation by communication with a network-based system.

15 7. A method according to claim 6, in which the step of making possible the carrying out of the operation comprises identifying, by means of coordinates coded by the position-coding pattern, a party that needs to use the person-specific information in association with carrying out the operation.

20 8. A method according to claim 7, in which the step of identifying said party comprises sending at least some of the coordinates to a first computer and of receiving in response an address in the network for the party.

25 9. A method according to claim 7 or 8, further comprising the step of making the person-specific information available to the party.

30 10. A method according to claim 9, in which the step of making the person-specific information available comprises creating an operation code and sending it to the party and to a second computer in the network which stores the person-specific information.

35 11. A method according to claim 10, further comprising the step of transmitting to the second computer and to the party a device identity which uniquely identifies the hand-held device and with which the person-specific information is associated.

20. A memory medium on which is stored a computer program comprising instructions to cause a computer to carry out a method according to any one of claims 6-19.

21. A hand-held device for initiating an operation
5 concerning goods or services indicated by means of printed information on a physical product, comprising a sensor for recording a position-coding pattern and a signal-processing unit for carrying out a method according to any one of claims 6-19.

10 22. A system for making possible at least one operation in a network concerning goods or services indicated on a product, which operation is intended to be initiated using one hand-held device of a plurality of hand-held devices by reading off a position-coding pattern, which
15 codes coordinates, in an operation field on the product, characterized by a device database which stores a unique identity for each of the devices and at least one item of person-specific information, associated with each identity, for the person who is the owner of
20 the device, so that the operation can be carried out by a party in the network using the person-specific information stored in the device database, the person-specific information being retrievable by the party by means of the device identity, which is sent to the party in response to the device reading off the position-coding
25 pattern in the operation field on the product.

23. System according to claim 22, further comprising an address database, which for each of a plurality of coordinate areas, the coordinates of which are coded by the
30 position-coding pattern, stores an address in the network of the party being the owner of the coordinate area.

24. A product comprising an indication concerning goods or services, characterized in that an operation field on the product is provided with a position-coding pattern that codes a plurality of coordinates
35 that represent an instruction to a network-based system to carry out an operation concerning said goods or ser-

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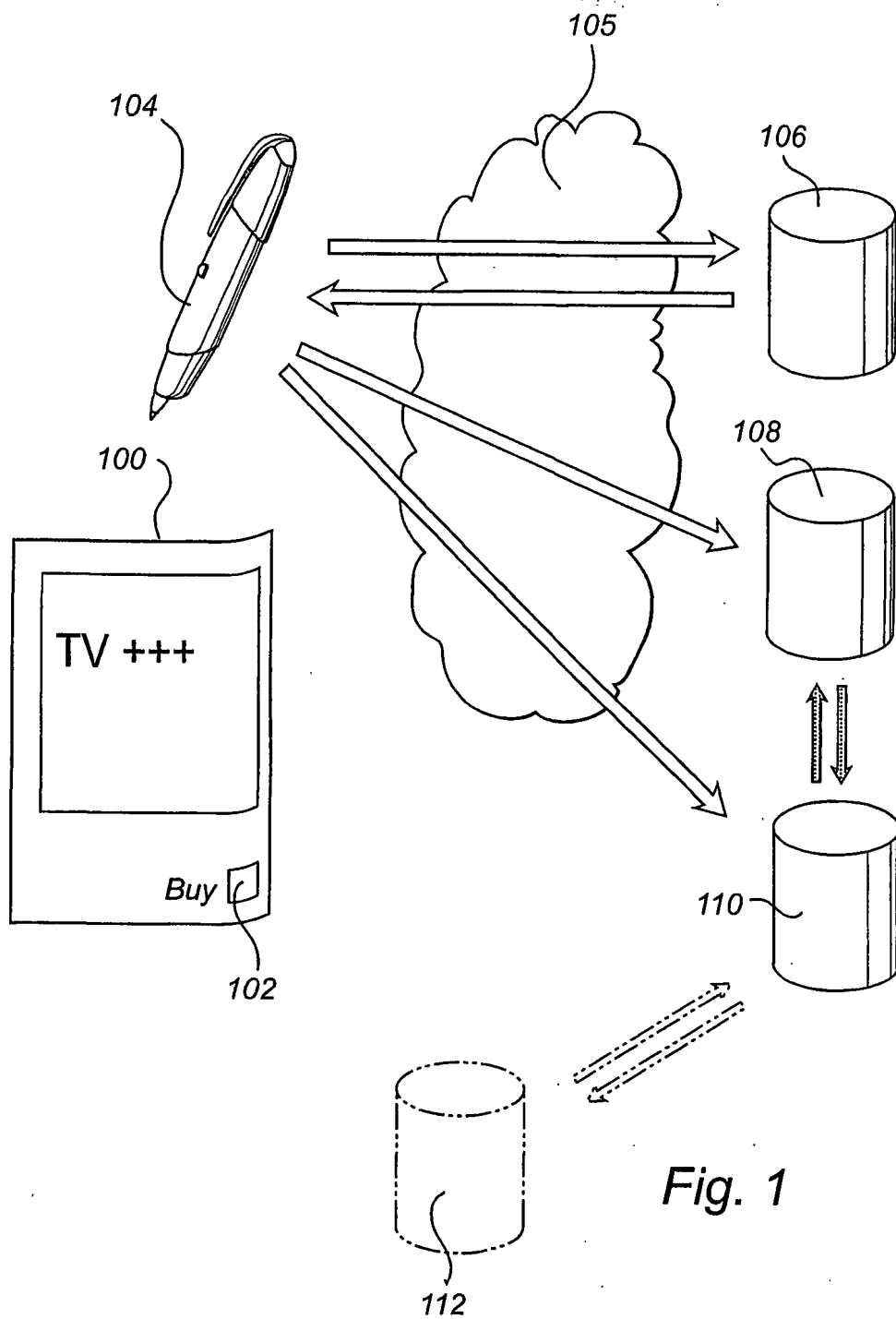


Fig. 1

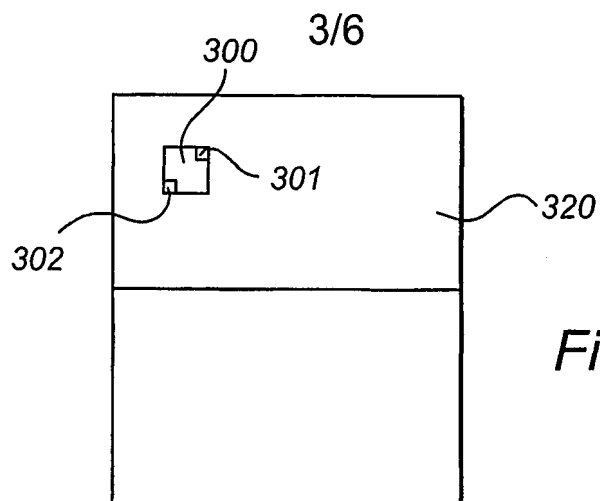


Fig. 3a

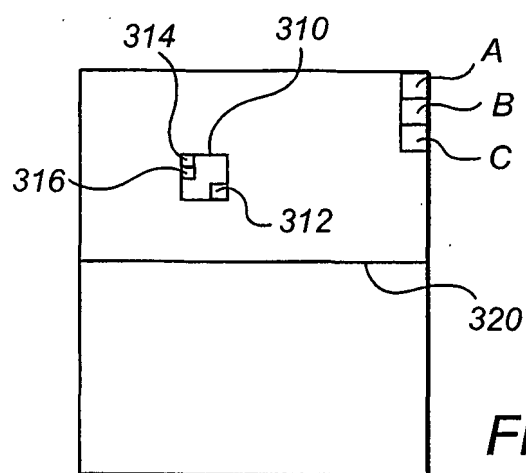


Fig. 3b

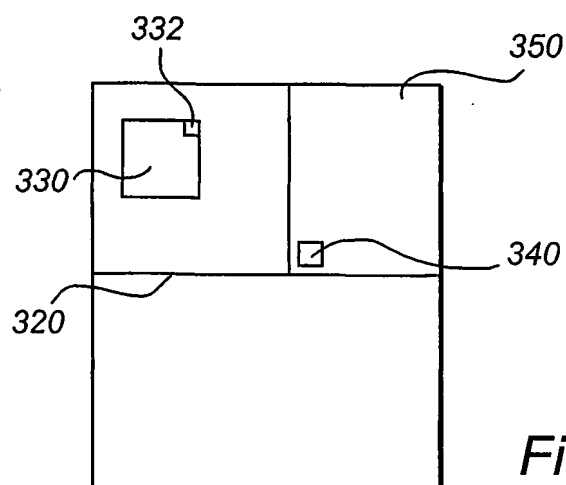


Fig. 3c

5/6

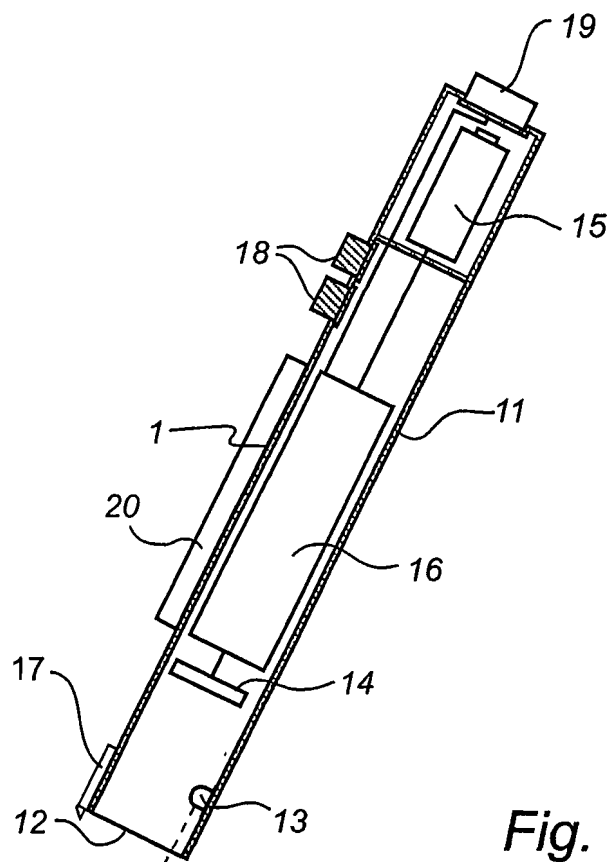


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/02505

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06K 19/06, G06F 3/033, G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06K, G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9950787 A1 (XEROX CORPORATION), 7 October 1999 (07.10.99), page 2, line 4 - line 18; page 10, line 6 - line 11; page 17, line 28 - page 18, line 2; page 30, line 6 - line 27; page 33, line 17 - page 34, line 9, figures 1,5,7,10-11,14-15, claims 1-5, abstract	1-24
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P,X	WO 0072241 A1 (SILVERBROOK RESEARCH PTY. LTD.), 30 November 2000 (30.11.00), page 1, line 36 - page 4, line 13; page 31, line 11 - page 32, line 34; page 41, line 2 - page 42, line 18, claims 1-4, abstract	1-24
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☒ Further documents are listed in the continuation of Box C. *☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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